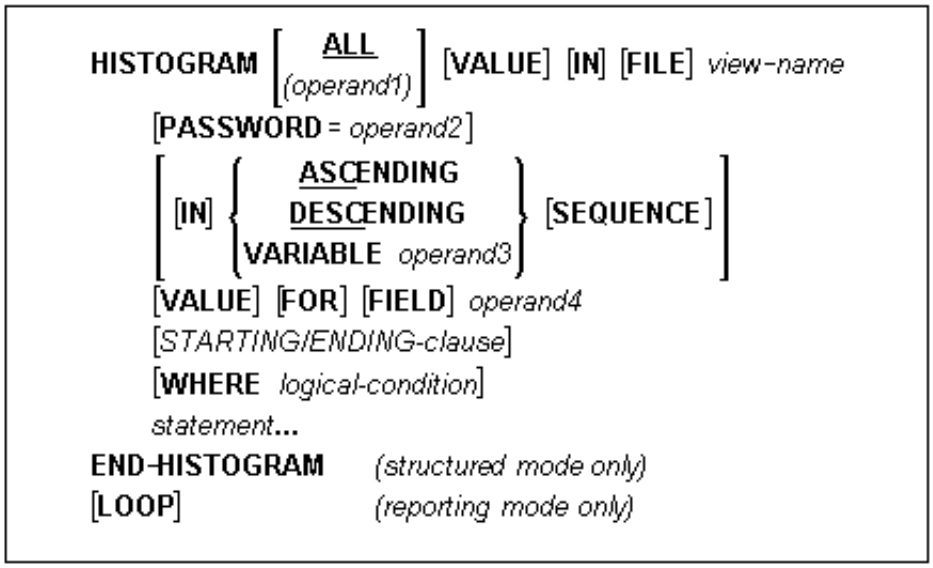
HISTOGRAM



Operand	Possible Structure					Possible Formats											Referencing Permitted	Dynamic Definition
Operand1	C	S					N	P	I								yes	no
Operand2	C	S				A											yes	no
Operand3		S				A											yes	no
Operand4		S				A	N	P	I	F	B	D	T	L			no	no

Related Statements: FIND | READ

Function

The HISTOGRAM statement is used to read the values of a database field which is defined as a descriptor, subdescriptor, or a superdescriptor. The values are read directly from the Adabas inverted lists (or VSAM index).

The HISTOGRAM statement causes a processing loop to be initiated but does not provide access to any database fields other than the field specified in the HISTOGRAM statement.

Note for SQL databases:
HISTOGRAM returns the number of rows which have the same value in a specific column.

Restrictions

This statement cannot be used with DL/I databases or Entire System Server.

When applied to a VSAM database, the HISTOGRAM statement is only valid for KSDS and ESDS.

Processing Loop Limit - operand1/ALL

You can limit the number of descriptor values to be processed with the HISTOGRAM statement by specifying *operand 1* - either as a numeric constant (0 to 99999999) or as a user-defined variable (containing an integer value). ALL may optionally be specified to emphasize that all descriptor values are to be processed.

For this statement, the specified limit has priority over a limit set with a LIMIT statement.

If a smaller limit is set with the LT parameter, the LT limit applies.

Notes:
If you wish to process a 4-digit number of descriptor values, specify it with a leading zero: (0nnnn); because Natural interprets every 4-digit number enclosed in parentheses as a line-number reference to a statement.
Operand1 is evaluated when the HISTOGRAM loop is entered. If the value of operand1 is modified within the HISTOGRAM loop, this does not affect the number of values read.

view-name

As *view-name*, you specify the name of a view, which is defined either within a DEFINE DATA statement or in a separate global or local data area.

The view must not contain any other fields apart from the field used in the HISTOGRAM statement (*operand4*).

If the field in the view is a periodic-group field or multiple-value field that is defined with an index range, only the first occurrence of that range is filled by the HISTOGRAM statement; all other occurrences are not affected by the execution of the HISTOGRAM statement.

In reporting mode, *view-name* may also be the name of a DDM.

PASSWORD Clause

The PASSWORD clause is used to provide a password (operand2) when retrieving data from an Adabas file which is password-protected. See the statements FIND and PASSW for further information.

SEQUENCE Clause

This clause can only be used for Adabas, VSAM and SQL databases.

With this clause, you can determine whether the values are to be read in ascending sequence or in descending sequence.

- The default sequence is ascending (which may, but need not, be explicity specified by using the keyword ASCENDING).
- If the values are to be read in descending sequence, you specify the keyword DESCENDING.
- If it is to be determined at runtime whether the values are to be read in ascending or descending sequence, you specify the keyword VARIABLE followed by a variable (*operand3*). The value of *operand3* at the start of the HISTOGRAM processing loop then determines the sequence. *Operand3* has to be of format/length A1 and can contain the value "A" (for "ascending") or "D" (for "descending").

Note for Adabas databases:
Descending sequence requires the following Adabas versions (or above): Version 3.1 on UNIX and Windows, Version 3.2 on OpenVMS, and Version 6.2 on mainframe computers.

Note for SQL databases:
On mainframe computers, the VARIABLE option cannot be used for SQL databases.

Examples of SEQUENCE Clause:

See the programs HSTDSCND and HSTVSEQ in the library SYSEXRM.

Descriptor - operand4

As *operand4*, a descriptor, subdescriptor, superdescriptor or hyperdescriptor may be specified.

A descriptor contained within a periodic group may be specified with or without an index. If no index is specified, the descriptor will be selected if the value specified is located in any occurrence. If an index is specified, the descriptor will be selected only if the value is located in the occurrence specified by the index. The index specified must be a constant. An index range must not be used.

For a descriptor which is a multiple-value field an index must not be specified; the descriptor will be selected if the value is located in the record regardless of the position of the value.

STARTING-ENDING-clause

Operand	Possible Structure					Possible Formats												Referencing Permitted	Dynamic Definition
Operand5	C	S				A	N	P	I	F	B	D	T	L				yes	no
Operand6	C	S				A	N	P	I	F	B	D	T	L				yes	no

Starting and ending values may be specified using the keywords STARTING and ENDING (or THRU) followed by a constant or a user-defined variable representing the value with which processing is to begin/end.

If a starting value is specified and the value is not present, the next higher value is used as the starting value. If no higher value is present, the HISTOGRAM loop will not be entered.

If an ending value is specified, values will be read up to and including the ending value.

Hexadecimal constants may be specified as a starting or ending value for descriptors of format A or B.

WHERE Clause

The WHERE clause may be used to specify an additional selection criterion (*logical-condition*) which is evaluated *after* a value has been read and *before* any processing is performed on the value (including the AT BREAK evaluation).

The descriptor specified in the WHERE clause must be the same descriptor referenced in the HISTOGRAM statement. No other fields from the selected file are available for processing with a HISTOGRAM statement. See the section Logical Condition Criteria in the Natural Reference documentation for the syntax and explanation of logical criteria.

System Variables

The following Natural system variables are available with the HISTOGRAM statement:

- ***NUMBER** - Contains the number of database records that contain the last value read. (For SQL databases, see the description of the system variable *NUMBER in the Natural Reference documentation.)
- ***ISN** - Contains the number of the occurrence in which the descriptor value last read is contained. *ISN will contain "0" if the descriptor is not contained within a periodic group. *ISN is not available for SQL and VSAM databases.
- ***COUNTER** - Contains a count of the total number of values which have been read (after evaluation of the WHERE clause).

*NUMBER and *ISN are only set after the evaluation of the WHERE clause. They must not be used in the logical condition of the WHERE clause.

Example

```
/* EXAMPLE 'HSTEX1S': HISTOGRAM (STRUCTURED MODE)
/*******************************************************
DEFINE DATA LOCAL
 1 EMPLOY-VIEW VIEW OF EMPLOYEES
   2 CITY
END-DEFINE
/*******************************************************
LIMIT 8
HISTOGRAM EMPLOY-VIEW CITY STARTING FROM 'M'
 DISPLAY NOTITLE CITY
         'NUMBER OF/PERSONS' *NUMBER *COUNTER
END-HISTOGRAM
/*******************************************************
END
```

```
      CITY         NUMBER OF   CNT
                      PERSONS
------------------- --------- ---------

MADISON                     3         1
MADRID                     41         2
MAILLY LE CAMP              1         3
MAMERS                      1         4
MANSFIELD                   4         5
MARSEILLE                   2         6
MATLOCK                     1         7
MELBOURNE                   2         8
```

Equivalent reporting-mode example: See the program HSTEX1R in the library SYSEXRM.

